IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants:	Stephen R. Van Doren et al. §	Confirmation No.:	5314
Serial No.:	10/758,352 §	Group Art Unit:	2186
Filed:	01/15/2004 §	Examiner:	Ryan A. Dare
For:	Transaction References For Requests In A Multi-Processor Network §	Docket No.:	200313750-1

APPEAL BRIEF

Mail Stop Appeal Brief – Patents
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

Date: December 15, 2009

Sir:

Appellants hereby submit this Appeal Brief in connection with the above-identified application. A Notice of Appeal was electronically filed on October 19, 2009.

TABLE OF CONTENTS

I. REAL PARTY IN INTEREST

The real party in interest is Hewlett-Packard Development Company, L.P. (HPDC), a Texas Limited Partnership, having its principal place of business in Houston, Texas. HPDC is a wholly owned affiliate of Hewlett-Packard Company (HPC). The Assignment from the inventors to HPDC was recorded on September 1, 2004, at Reel/Frame 015745/0257.

II. RELATED APPEALS AND INTERFERENCES

Appellants are unaware of any related appeals or interferences.

III. STATUS OF THE CLAIMS

Originally filed claims:	1-46.
Claim cancellations:	None.
Added claims:	None.
Presently pending claims:	1-46.
Presently appealed claims:	1-46.

IV. STATUS OF THE AMENDMENTS

No claims were amended after the final Office action dated September 2, 2009.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

This section provides a concise explanation of the subject matter defined in each of the independent claims, referring to the specification by page and line number or to the drawings by reference characters as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified with a corresponding reference to the specification or drawings where applicable. The specification references are made to the application as filed by Appellants. Note that the citation to passages in the specification or drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element. Also note that these specific references are not exclusive; there may be additional support for the subject matter elsewhere in the specification and drawings.

Various embodiments are directed to a system as in claim 1:

1. A system comprising:

a home node[1] that provides a transaction reference to a requester[2] in response to a request from the requester;[3] and

the requester providing an acknowledgement message to the home node in response to the transaction reference,[4] the transaction reference enabling the requester to determine an order of requests at the home node relative to the request from the requester.[5]

---

[1] Fig. 2 (58). Disclosure p. 5 line 2 of para. 23.

[2] Fig. 2 (52). Disclosure p. 5 lines 3-4 of para. 23.

[3] Disclosure pp. 5-6 lines 1-16 of para. 23.

[4] Disclosure pp. 5-6 lines 1-16 of para. 23.

[5] Disclosure pp. 5-6 line 1 of para. 23 through p. 7 line 13 of para. 27.

Other embodiments are directed to a multi-processor system as in claim 16:

16. A multi-processor system comprising:

a first requesting processor[6] that provides a first request for data to a home node;[7]

a second requesting processor[8] that provides a second request for the data to the home node;[9] and

the home node[10] comprising a transaction resource[11] for managing requests for the data, the home providing a transaction reference message to one of the first and second requesting processors, the one of the first and second requesting processors employing the transaction reference message to ascertain a relative order of the first and second requests for the data ordered at the home node.[12]

Other embodiments are directed to a multi-processor network as in claim 27:

27. A processor in a multi-processor network, the processor comprising:

a transaction structure that contains at least a first entry associated with a first request for data issued by the processor,[13] the first entry including a transaction reference field that has a value based on a transaction reference message from a home node for the data, the value of the transaction reference

---

[6] Disclosure p. 5 line 4 of para. 23.

[7] Fig. 2 (52). Disclosure p. 5 lines 3-4 of para. 23.

[8] Fig. 2 (54). Disclosure p. 5 lines 3-4 of para. 23.

[9] Disclosure p. 6 line 1.

[10] Fig. 2 (58). Disclosure p. 5 line 2 of para. 23.

[11] Fig. 3. Disclosure p. 8 line 1 of para. 30 through page 15 line 11 of para. 51.

[12] Disclosure pp. 5-6 line 1 of para. 23 through p. 7 line 13 of para. 27.

[13] Fig. 3 (158). Disclosure p. 12 lines 1-10.

field providing an indication of an order of transactions targeting the data at the home node;[14] and

a controller[15] that controls how to respond to a second request for the data received from the home node based on the value of the transaction reference field.

Other embodiments are directed to a multi-processor system as in claim 33:

33. A multi-processor system comprising:

means for providing a transaction reference message substantially in parallel with at least one snoop request from a home node in response to a first request for data from a requesting processor;[16]

means for setting a transaction reference field at the requesting processor in response to the transaction reference message;[17] and

means for responding to at least a second request provided to the requesting processor based on a condition of the transaction reference field when the at least a second request is received.[18]

The invention of claim 34 provides additional features.

34. The system of claim 33, further comprising means for deferring a response to the at least a second request from the requesting processor based on the condition of the transaction reference field indicating that the at least a second request is subsequent to the first request.[19]

---

[14] Disclosure p. 12 lines 1-20.

[15] Fig. 3 (156). Disclosure p. 12 lines 1-10.

[16] Fig. 2 (58). Disclosure p. 5 line 2 of para. 23.

[17] Fig. 3 (116). Disclosure p. 10 line 5 of para. 38.

[18] Fig. 3 (116). Disclosure p. 13 lines 1-5 of para. 47.

[19] Fig. 1 (58). Disclosure p. 12 lines 1-10 of para. 44.

Other embodiments are directed to a method as in claim 40:

40. A method comprising:

providing a fill marker message from a home node in response to a first request for a block of data from a requester;[20]

setting a fill marker status field at the requester in response to the fill marker message from the home node;[21] and

providing a response from the requester to a second request for the block of data that varies temporally based on a condition of the fill marker status field at the requester.[22]

[20] Fig. 8 (410). Disclosure p. 28 lines 1-3 of para. 93.

[21] Fig. 8 (420). Disclosure p. 28 lines 3-4 of para. 93.

[22] Fig. 8 (430). Disclosure p. 28 lines 5-7 of para. 93.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-2, 16-17, 27-28, 33-34 and 40-41 are anticipated (35 U.S.C. § 102(b)) by Hughes (U.S. Pat. Pub. No. 2002/0184453).

Whether claims 3-15, 18-26, 29-32, 35-39 and 42-46 are obvious (35 U.S.C. § 103) over Hughes in view of Van Loo (U.S. Pat. No. 5,657,472).

VII. ARGUMENT

A. Whether claims 1-2, 16-17, 27-28, 33-34 and 40-41 are anticipated by Hughes

1. Claim 1

Claim 1 requires a home node and a requestor. The claim further requires three messages being passed between the home node and requestor, as also illustrated in Appellants' Fig. 1. The request provides a request to the home node and the home node provides a transaction reference ("FM" in Fig. 1) back to the requester in response to the request. The requester provides an acknowledgement message ("FM ACK") to the home node in response to the transaction reference (FM) message. The transaction reference "enable[s] the requester to determine an order of requests at the home node relative to the request from the requester. Appellants respectfully submit that the rejection is flawed in several regards.

First, Hughes lacks a teaching of the claimed "transaction reference" which is received by the requester to enable the requester to determine an order of requests at the home node relative to the request from the requester. That is, the requester is able to determine the order of requests at a different node (specifically, the home node) based on the transaction reference received by the requester. For claim 1, the Examiner focused on paras. [0005] and [0006] of Hughes.

Paragraph [0005] teaches that an initiator issues a write request to a target and the target may respond with an acknowledgment. This teaching is clearly different than the claimed feature of claim 1.

Paragraph [0006] teaches that an initiator issues a read request to a target device. The target device returns the requested data to the initiator. The requested data may be returned in multiple messages which may pass through different routes back to the initiator. Each return data message has a "transaction identifier" that enables the initiator to re-assemble the return data messages in the correct order. The transaction identifier of Hughes does not enable the

initiator to determine the order of requests at the target device relative to the request from the requester.

Hughes also lacks a teaching of the three-message feature of claim 1; (1) a request from requester to home node, (2) a transaction reference from home node to requester, and (3) a transaction reference acknowledgment from requester to home node. At most Hughes teaches a write request followed by an acknowledgment, or a read request followed by one or more data response messages.

For at least these reasons, the Examiner erred in rejecting claim 1 and dependent claim 2 over Hughes.

2. Claim 2

Claim 2 requires the home node to provide a snoop associated with the request from the requester. The Examiner pointed to para. [0165] discloses this limitation, but Appellants find no mention of a snoop in para. [0165] or elsewhere in Hughes.

3. Claim 16

Independent claim 16 requires first and second requesting processors and a home node. The first and second requesting processors provide first and second requests, respectively, to the home node. One of the first and second requesting processors receives a transaction reference message from the home node. The transaction reference message is employed by the requesting processor that receives it to "ascertain a relative order of the first and second requests for the data ordered at the home node."

The Examiner referred to paras. [0005] and [0006] from Hughes as allegedly teaching this claimed feature. Such paragraphs, however, lack a teaching or even a suggestion of such a "transaction reference." Paragraph [0006] teaches that return read messages with data contain a transaction identifier that enables the initiator of the read transaction to re-assemble the returned data in the correct order. But, the transaction identifier does not enable the initiator to ascertain a relative order of requests received at the target, from at least two different initiators, for target's requested data.

For at least these reasons, the Examiner erred in rejecting claim 16 and dependent claim 17 over Hughes.

4. Claim 17

For claim 17 the Examiner simply referred to paras. 5, 6, and 165 of Hughes without explanation. Claim 17 requires a "transaction reference field" associated with a request that is set to enable the requesting processor to ascertain the order of requests at the home node. Hughes has no teaching any such transaction reference field. For this additional, the Examiner erred in rejecting claim 17

5. Claim 27

Independent claim 27 requires a transaction reference field in the transaction structure of a processor. As amended, the transaction reference field provides an indication of the order of transactions "targeting" the data at the home node. Per claim 27, the claimed processor is not the home node. Thus, a non-home node (e.g., a requester node) has a transaction reference field that provides an indication of the order of transactions that target data at the home node. The amendment, which is well-supported by the specification, clarifies that the claimed "order" refers to the order of transactions that target data in the home node, not, as in Hughes, the order of data packets that are returned to the initiator for re-assembling in the correct order.

As explained above, Hughes lacks any such a teaching. For at least these reasons, the Examiner erred in rejecting claim 27 and dependent claim 28 over Hughes.

6. Claim 28

For claim 28, the Examiner simply stated that "[c]laim 28 is rejected using similar reasoning as claim 2." Appellants note that claim 28 has limitations that are different from claim 2 and that are not found in Hughes anyway.

7. Claim 33

The Examiner rejected claim 33 referring solely to paras. [0005] and [0006] and without any explanation. Independent claim 33 requires "means for providing a transaction reference substantially in parallel with at least one snoop request."

Hughes lacks any teaching of a snoop request. Hughes also lacks any teaching of providing a transaction reference and a snoop request "substantially in parallel."

Claim 33 also requires "means for responding to at least a second request provided to the requesting processor based on a condition of the transaction reference field when the at least a second request is received." Hughes lacks any such response based on the stated condition of claim 33.

For at least these reasons, the Examiner erred in rejecting claim 33 and dependent claim 34 over Hughes.

8. Claim 34

For claim 34, the Examiner simply stated that "[c]laim 34 is rejected using similar reasoning as claim 2." Appellants note that claim 34 has limitations that are different from claim 2. Further, Hughes lacks a teaching of deferring a response to a second request based on the specific claimed condition.

9. Claim 40

As with the other claims, the Examiner rejected claim 40 referring solely to paras. [0005] and [0006] and without any explanation. Independent claim 40 requires "providing a response from the requester to a second request for the block of data that varies temporally based on a condition of the fill marker status field at the requester." Hughes lacks any teaching of providing such a response based on the stated condition of claim 40. For at least this reason, claim 40 and dependent claim 41 are allowable over Hughes

10. Claim 41

For claim 41, the Examiner purports to refer to claim 16. However, the limitations listed by the Examiner in the rejection of claim 41 seem to be limitations from claim 17. Claim 41 has limitations that are different than those of claim 17 and thus Appellants are unclear why the Examiner is referring to a claim with limitations that differ from the claim at hand (claim 41). At any rate, Appellants do not find the limitations of claim 41 in Hughes, and the Examiner has not disproved this assertion.

B. Whether claims 3-15, 18-26, 29-32, 35-39 and 42-46 are obvious over Hughes in view of Van Loo

Claims 3-15, 18-26, 29-32, 35-39 and 42-46 depend from independent claims that are allowable over Hughes as explained above. Van Loo does not satisfy the deficiencies of Hughes. For at least this reason, the Examiner erred in rejecting claims 3-15, 18-26, 29-32, 35-39 and 42-46 over Hughes in view of Van Loo. Additional reasons are provided below in support of the allowability of various of these claims.

1. Claim 6

Dependent claim 6 requires that "the requester is configured to employ data received in response to the request from the requester for a single use if the requester receives an invalidate command before receiving a copy of the data in response to the request from the requester and when a transaction reference has not yet been received by the requester." Appellants' respectfully submit that the Examiner's rejection makes no sense. The Examiner alleges that Hughes teaches the first, non-underlined part of the claim and that Van Loo teaches the latter, underlined part of the claim.

The Examiner's statement regarding Van Loo is as follows:

> "Van Loo teaches that if the requester receives an invalidate command before receiving a copy of the data in response to the request from the requester and when a transaction reference has not yet been received by the requester."

This statement is an incomplete sentence. The Examiner's statement essentially is: Van Loo teaches that if a certain condition is true. The Examiner fails to indicate what Van Loo discloses is to happen if that condition is true. Van Loo certainly does not disclose what the claim requires which is, if the claimed condition is true, for the requester to employ data for a single use. The Examiner has simply picked snippets of discussion from various references improperly using hindsight of Appellants' teachings. The Examiner has not presented any objective evidence to establish that one of ordinary skill in the art would have believed the limitation obvious of employing data for single use if an invalidate command is received before receiving a copy of the data and when a transaction

reference has not yet been received. At any rate, Van Loo simply only discloses that an invalidate command is sent to the cache memory storing the same data block as the data block being written to main memory. This use of an invalidate command is substantially different from what is required by claim 6, and Hughes fails to satisfy this deficiency of Van Loo.

2. Claim 9

Claim 9 depends from claim 8, which introduces a second requester that provides a request and a particular order at which the home node receives the second request subsequent to the first request. Claim 9 requires that the home node issues transaction reference associated with the second request, which is provided by the second requester (claim 8). The reliance by the Examiner on Van Loo at col. 71, lines 30-39 relates to clearing a S_REQ status bit when a P_REPLY is received. The P_REPLY in Van Loo is used by a port to acknowledge a system controller request (S_REQ). Van Loo at col. 11, lines 10-12. Thus, the cited section of Van Loo at col. 71, lines 30-39, simply clears a status bit when a port acknowledges the S_REQ - not information indicating that a request has been completed (claim 9).

3. Claim 11

Regarding claim 11, the requester comprises a processor having a miss address file. In contrast, the cited section of Van Loo at col. 71 relates to the use of a S_REQ FIFO buffer that is part of the system controller - not the requester. For example, all S_REQ's for each processor are stored in a FIFO to ensure ordering requirements. See Van Loo, col. 71, lines 22 et seq. Moreover, the S_REQ status bits are cleared in response to receiving corresponding P_REPLY.

4. The Examiner has ignored numerous claim limitations

Regarding claims 18-26, the Examiner simply said that "they claim similar features as claims 3-15 but depend from claim 16, and are therefore rejected using similar logic." Office Action page 11. Appellants disagree. For example, claim 20 requires a "third request" which does not appear to be required by any of claims 3-15. By way of further example, claim 25 requires the home to

maintain a transaction in a "passive state" until a certain condition is true. This limitation does not appear to be required in any of claims 3-15.

Regarding claims 29-32, the Examiner similarly alleged that "they claim similar features as claims 3-15 but depend from claim 27, and are therefore rejected using similar logic." Office Action page 11. Appellants disagree. For example, claim 32 requires that the first entry of the transaction structure includes a fill-invalid field. This limitation does not appear to be required in any of claims 3-15.

Other limitations in such claims and other claims also may have been ignored by the Examiner.

C. Conclusion

For the reasons stated above, Appellants respectfully submit that the Examiner erred in rejecting all pending claims. It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's Deposit Account No. 08-2025.

Respectfully submitted,

/Jonathan M. Harris/

Jonathan M. Harris
PTO Reg. No. 44,144
CONLEY ROSE, P.C.
(713) 238-8000 (Phone)
(713) 238-8008 (Fax)
ATTORNEY FOR APPELLANTS

HEWLETT-PACKARD COMPANY
Intellectual Property Administration
Legal Dept., M/S 35
3404 E. Harmony Road
Fort Collins, CO 80528-9599

VIII. CLAIMS APPENDIX

1. A system comprising:

a home node that provides a transaction reference to a requester in response to a request from the requester; and

the requester providing an acknowledgement message to the home node in response to the transaction reference, the transaction reference enabling the requester to determine an order of requests at the home node relative to the request from the requester.

2. The system of claim 1, wherein the home node provides a snoop associated with the request from the requester substantially in parallel with providing the transaction reference.

3. The system of claim 1, wherein the system employs a null-directory cache coherency protocol, the home node providing a transaction reference for each request to the home node.

4. The system of claim 1, wherein the system employs a directory-based cache coherency protocol, the home node providing a transaction reference for a selected subset of requests to the home node.

5. The system of claim 4, wherein the selected subset of requests to the home node comprises write requests and requests in response to which the home node generates at least one snoop.

6. The system of claim 4, wherein the requester is configured to employ data received in response to the request from the requester for a single use if the requester receives an invalidate command before receiving a copy of the data in response to the request from the requester and when a transaction reference has not yet been received by the requester.

7. The system of claim 1, wherein the home node further comprises a transaction resource that maintains transaction information associated with each of a plurality of requests to the home node, the transaction information including an indication of whether the requester has received the transaction reference associated with the request from the requester and an indication of whether a response has been received for each snoop issued by the home node in response to the request from the requester.

8. The system of claim 1, wherein the requester comprises a first requester that provides a first request for data to the home node, the system further comprising a second requester that provides a second request for the data to the home node, the home node receiving the second request for the data subsequent to the first request for the data.

9. The system of claim 8, wherein the home node is programmed to issue a transaction reference associated with the second request based on transaction information at the home node associated with the first request indicating that the first request has been completed.

10. The system of claim 9, wherein the transaction information at the home node associated with the first request further comprises an indication that the transaction reference has been received by the first requester and an indication that the home node has received a complete set of at least one response to each of at least one snoop provided by the home node in response to the first request.

11. The system of claim 1, wherein the requester further comprises a processor having a miss address file that includes an entry associated with the request from the requester, wherein a transaction reference field in the entry associated with the request from the requester is set in response to the transaction reference from the home node.

12. The system of claim 11, wherein the processor further comprises a queue, the requester controlling whether a snoop for data from the home node is placed in the queue based on the transaction reference field.

13. The system of claim 12, wherein the processor further comprises an associated cache that includes a plurality of cache lines, the requester is

configured to provide a response to the snoop for the data from the home node based on a present state of the data in a respective one of the cache lines if the transaction reference field is not set when the snoop for the data from the home node is received by the requester.

14. The system of claim 12, wherein the processor further comprises an associated cache that includes a plurality of cache lines, the requester is configured to place the snoop for the data from the home node in the queue for deferring a response if the transaction reference field is set when the snoop for the data from the home node is received by the requester.

15. The system of claim 1, wherein the system comprises an unordered network.

16. A multi-processor system comprising:

a first requesting processor that provides a first request for data to a home node;

a second requesting processor that provides a second request for the data to the home node; and

the home node comprising a transaction resource for managing requests for the data, the home providing a transaction reference message to one of the first and second requesting processors, the one of the first and second requesting

processors employing the transaction reference message to ascertain a relative order of the first and second requests for the data ordered at the home node.

17. The system of claim 16, wherein the first request is ordered at the home node preceding the second request and the first requesting processor is the one of the first and second requesting processors, the first requesting processor further comprises a transaction reference field associated with the first request from the requester that is set in response to the transaction reference message to enable the first requesting processor to ascertain an order of at least one request for the data from the home node relative to the first request at the home node.

18. The system of claim 17, wherein the first requesting processor further comprises a queue, the first requesting processor controlling whether a third request for the data from the home node is placed in the queue based on the transaction reference field.

19. The system of claim 18, wherein the third request for the data comprises a forward request provided by the home node in response to the second request for the data.

20. The system of claim 18, wherein the first requesting processor is configured (i) to provide a response to the third request based on a present state of the data in a respective one of the cache lines if the transaction reference field

is not set when the third request is received and (ii) to place at least a portion of the third request for the data from the home node in the queue for deferring a response if the transaction reference field is set when the third request is received.

21. The system of claim 16, wherein the system employs a null-directory cache coherency protocol, the home node providing a transaction reference for each request for the data to the home node, the home node providing a forward request substantially in parallel with the transaction reference to each other processor in the system corresponding to the request from the one of the first and second requesting processors.

22. The system of claim 16, wherein the system employs a directory-based cache coherency protocol, the home node providing a transaction reference for a selected subset of requests for the data to the home node.

23. The system of claim 22, wherein the home node further comprises a directory that includes directory state information associated with the data, the home node is configured (i) to provide a forward request substantially in parallel with the transaction reference to at least one other processor in the system corresponding to the request from the one of the first and second requesting processors if the directory state information indicates that the data is cached at the at least one other processor in the system, and (ii) to provide a data response

to the one of the first and second requesting processors if the directory state information indicates that the data is not cached in the system.

24. The system of claim 23, wherein the one of the first and second requesting processors is configured to employ data received in response to the request from the requester for a single use if the requester receives an invalidate command before the data is received in response to the request from the one of the first and second requesting processors and if a transaction reference associated with the first request has not been received by the requester.

25. The system of claim 16, wherein the first request is ordered at the home node subsequent to the second request and the second requesting processor is the one of the first and second requesting processors, the home node being programmed to maintain a transaction associated with the first request in a passive state until transaction information at the home node associated with the second request indicates that the second request has been completed.

26. The system of claim 25, wherein the transaction information at the home node associated with the second request further comprises an indication that the transaction reference message has been received by the second requesting processor and an indication that the home node has received a complete set of at least one response to each of at least one snoop provided by the home node in response to the second request.

27. A processor in a multi-processor network, the processor comprising:

a transaction structure that contains at least a first entry associated with a first request for data issued by the processor, the first entry including a transaction reference field that has a value based on a transaction reference message from a home node for the data, the value of the transaction reference field providing an indication of an order of transactions targeting the data at the home node; and

a controller that controls how to respond to a second request for the data received from the home node based on the value of the transaction reference field.

28. The processor of claim 27, further comprising a queue capable of storing the second request for cached data, the controller controlling whether the second request for the data is placed in the queue based on the value of the transaction reference field.

29. The processor of claim 28, further comprising an associated cache that includes a plurality of cache lines, the controller enabling the processor to provide a response to the second request for the data based on a present state of the data in a respective one of the cache lines if the transaction reference field has a value indicating that the transaction reference message has not been received from the home node when the second request for the data is received.

30. The processor of claim 28, further comprising an associated cache that includes a plurality of cache lines, the controller placing the second request for the data in the queue for providing a deferred response if the transaction reference field has a value indicating that the transaction reference message has been received from the home node when the second request for the data is received.

31. The processor of claim 27, wherein the home node provides the transaction reference message to the processor in response to the first request, the requester providing an acknowledgement message to the home node in response to the transaction reference message.

32. The processor of claim 27, wherein the multi-processor network comprises an unordered network that employs a directory-based protocol, the first entry of the transaction structure further including a fill-invalid field, the controller setting the fill-invalid field in response to receiving an invalidate command before the data is received in response to the first request and when the transaction reference field has a value indicating that the transaction reference message has not been received from the home node, the processor being afforded a single use of the data if the fill-invalid field is set.

33. A multi-processor system comprising:

means for providing a transaction reference message substantially in parallel with at least one snoop request from a home node in response to a first request for data from a requesting processor;

means for setting a transaction reference field at the requesting processor in response to the transaction reference message; and

means for responding to at least a second request provided to the requesting processor based on a condition of the transaction reference field when the at least a second request is received.

34. The system of claim 33, further comprising means for deferring a response to the at least a second request from the requesting processor based on the condition of the transaction reference field indicating that the at least a second request is subsequent to the first request.

35. The system of claim 33, wherein the system comprises an unordered network and employs a null-directory cache coherency protocol in which the means for providing a transaction reference message provides a transaction reference for each request that is provided to the home node.

36. The system of claim 33, wherein the system comprises an unordered network and employs a directory-based cache coherency protocol, the home

node providing a transaction reference for a selected subset of requests that are provided to the home node.

37. The system of claim 33, further comprising:

means for providing an acknowledgement to the home node from the requesting processor in response to the transaction reference message; and

means for managing requests received at the home node subsequent to the first request based on the acknowledgement from the requesting processor and based on whether a response has been received by the home node for the at least one snoop provided by the home node.

38. The system of claim 33, further comprising means for providing a response from the requesting processor to the at least a second request based on the condition of the transaction reference field indicating that the at least a second request precedes the first request at the home node, the requesting processor providing the response to the at least a second request based on a present state of the data in a respective cache line of the requesting processor.

39. The system of claim 33, further comprising means for deferred processing of a transaction associated with the second request until confirming that the transaction reference message has been received by the requesting processor and that the home node has received a response to each of the at least one snoop request provided by the home node.

40. A method comprising:

providing a fill marker message from a home node in response to a first request for a block of data from a requester;

setting a fill marker status field at the requester in response to the fill marker message from the home node; and

providing a response from the requester to a second request for the block of data that varies temporally based on a condition of the fill marker status field at the requester.

41. The method of claim 40, further comprising issuing at least one forward request for the block of data from the home node concurrently with the fill marker message in response to the first request.

42. The method of claim 41, further comprising:

receiving an acknowledgement at the home node that the requesting processor has received the fill marker message; and

managing requests for the block of data received at the home node subsequent to the first request based on the acknowledgement and based on whether a response has been received by the home node for the at least one forward request provided by the home node.

43. The method of claim 40, further comprising deferring a response from the requester to a second request for the block of data based on the condition of the

fill marker status field indicating that the second request has a later order than the first request at the home node.

44. The method of claim 40, wherein the method is implemented in a multiprocessor system employing a null-directory cache coherency protocol, the method further comprising providing a fill marker message from the home node in response to each request for the block of data that is provided to the home node.

45. The method of claim 40, wherein the method is implemented in a multiprocessor system employing a directory-based cache coherency protocol, the method further comprising providing a fill marker message for a selected subset of requests provided to the home node that require the home node to issue at least one snoop for the block of data.

46. The method of claim 40, further comprising queuing a transaction associated with the second request for deferred processing until confirming that the transaction reference message has been received by the requesting processor and that the home node has received a response to each of the at least one snoop provided by the home node.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.